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learned discussion the dignity and grace of great statuary and architecture. Croce is one of the most educated minds of the present time. He is so saturated with civilized life—indeed, his thought fairly drips with it—that no logic that is not real interests him. One lays the book down feeling as if he had been wandering in a diving-bell through the veins and arteries of humanity with the warm currents of its life pressing him on every side. One gathers from the text that the author is himself a sculptor, a traveller, a lover of poetry and painting, perhaps himself a poet, a sympathetic student of religions, and with it all, a man of the world. His humor is subtle and whole-hearted. He knows his own mind and speaks his thought right out, like one who both enjoys and trusts his pen. He has written a wonderful book, and it has been elegantly translated and printed.

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## EXPERIMENTAL DETERMINISM AND HUMAN CONDUCT

IS a reasonable theory of human conduct possible on the basis of experimental determinism? Are conscience, responsibility, praise, blame, reward, punishment, compatible with complete determinism? What is the relation of experimental determinism to freedom?

The misgiving revealed in these questions I find to be the chief ground for hesitation in the complete acceptance of experimental determinism, even by men engaged in experiment; it is doubtless felt by all men who on other grounds would naturally assent to experimental determinism.<sup>1</sup> Does its acceptance involve a contradiction between one's theory and the necessary practise of daily life? If so, the theory is doubtless wrong.

What are the fundamental things that experimental determinism implies and what does it not imply? The writer has tried to answer these questions elsewhere;<sup>2</sup> here merely certain main points will be recapitulated.

Determinism holds that whenever there is a diversity between two events, this is preceded by other diversities so related to the later ones that if the preceding diversities are lacking, the later diversities do not occur. *Experimental* determinism holds that a given perceptual diversity between two events is always accompanied and pre-

<sup>1</sup> This difficulty has recently been strongly put by my colleague, S. O. Mast (*Science*, December 13, 1918).

<sup>2</sup> "Mechanism and Vitalism," *Philosophical Review*, November, 1918.

ceded by other diversities that are likewise perceptual, in the sense that they are manifested, not alone through the given perceptual result, but are subject to other perceptual tests for their occurrence; and are so related to the later diversities that if the earlier diversity is removed (experiment), the later one disappears.

Experimental determinism does not coincide with mechanism in the narrower sense, which is only one form of experimental determinism; a form that appears not admissible for all biological phenomena. Experimental determinism does not demand that the result of a given diversity should be computable or predictable before the result has occurred. It admits the possibility of the continual appearance of things that have never occurred before, and could not have been predicted from a knowledge of what had occurred before; all it demands is that diversities in the things so appearing shall be preceded by other perceptual diversities that experimentally determine them. Experimental determinism does not imply that conscious states have no (experimental) effect on action; does not imply that the mental is isolated from other perceptual activities; does not imply that "everything would have happened in just the same way without consciousness." It holds that diversities of human actions are determined by just what critical observation and experimentation find them to be; by diversities in character, education, reasoning, feelings, principles, appetites, as well as by diversities in the sense organs, muscles, nerves and in the present outward situation. It holds also that diversities in all these things are accompanied and preceded by other perceptual diversities that experimentally determine them.

Is a reasonable theory of human conduct possible on this basis?

What is the alternative? Is a reasonable theory of human conduct possible on the basis that action *is not determined in any way*? Can we reconcile conscience, responsibility, praise, blame, reward, punishment with the notion that what a man does is not the expression of what he is, not the result of his character, nor of his principles, nor of his reasoning, nor of any process occurring within him, nor of the situation in which he finds himself, but is independent of all those things and of everything else? Can a man be held responsible for an occurrence that is independent of all that he is? Can we reasonably praise him or blame him, reward him or punish him for actions that do not depend on his character, his will, his wishes, his intellect; the situation in which he finds himself?

To some minds the asking of these questions appears equivalent to answering them. Action that has no dependence on a man's character, principles, knowledge, reasoning or situation, would ap-

pear to be precisely the height of irresponsibility. If crime is not determined in any way, then whatever my character, I am as likely to commit a crime as the most hardened criminal. A man can not reasonably be commended, blamed or held responsible for occurrences that have no connection with what he is. If my actions are not determined by my thought, why take thought. This, not experimental determinism, is the doctrine that leads straight to fatalism.

On the opposing view, one of the determining factors in a man's conduct is precisely his conscience, his sense of responsibility; without it he would act otherwise. Praise and blame, reward and punishment, are justified because they control conduct (not because conduct is independent of them!). The death penalty controls the conduct of other members of the stock; or is a measure of safety for the other members, like the putting out of a fire. Those responsible for the Great War are so because it is the outgrowth of their principles or lack of principles, of their characters and theory of life; not because it produced itself independently of them. To take thought is justified because thought determines action.

All the necessary phenomena and practises in the daily conduct of human life find their place in the scheme of experimental determinism; each plays its part. But if actions are not determined in any way, conscience, reasoning, reward and punishment are without function.

What is the relation of this to freedom? The just basis for the concept of freedom is that a man is not controlled exclusively by forces external to himself, nor by chance, but that what he does, and what happens in the world outside of him, depend upon *him*; upon his character, his knowledge, his desires, his thought. Two men under the same outward conditions will act diversely, depending upon their diversity in these internal differentiations; the character and thought of each determine what shall occur. Is a man free if he acts in a way that has no connection with his experience, wishes, character, thought or situation? Not irresponsibility, chance or indeterminism, but holding within one's self the determinants of action is what constitutes freedom.

But it is when one takes the long view, when he looks at the continuity of determining and of occurrence from before his own coming into action until after it, that he seems not to be free. For it appears that all now occurring was determined by earlier conditions; hence, does it not seem that it is now not *I* that am acting, but those pre-existing conditions; does it not appear that *I* am quite impotent? How can I feel responsible or make efforts or take thought for what I shall do, since that was determined long ago?

We seem to meet the same difficulty met when we held that action is free in the sense of undetermined. There we said: Why take thought if thought does not determine action? Here we are inclined to say: Why take thought if the action was determined before the thought occurs?

At the worst the position of experimental determinism shares this difficulty with the theory of indeterminism; as well as with any metaphysical deterministic theory, such as that which holds that action is determined by entelechy or God or providence; so that we are left to choose our theory on other considerations than this. But I am disposed to question whether the difficulty exists for experimental determinism; it appears to result from a wrong notion of what such determinism implies. The notion that seems to make my own individuality count for nothing in action, is that the action was already worked out, "scheduled," computable, in some sense existent, before it occurred; before I existed. But experimental determinism does not imply this; it implies only that if what now occurs were different, the earlier conditions would have been different; though what now occurs need not be predictable from nor existent in those earlier conditions; it is determinism in a backward view, not necessarily in a forward one. Combinations in me may be such as have not occurred before, giving results not to be known till they appear, so that my action has all the interest of the unknown, the novel; my individuality is precisely what makes this particular result possible, so that I am indeed creative. I could not possibly hold this if what I am does not determine my action; nor could I hold it if I conceive that my action is but a coming into view of a preexistent entelechy. Experimental determinism presents the just basis for formulable science, for rational conduct of life, and for creative evolution.

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## DR. DAWES HICKS ON REALITY AND ITS APPEARANCES

DR. HICKS'S general theory of the nature of physical objects is markedly realistic, if we take this term to mean predominantly non-subjectivist—appearances "evince themselves as ways in which the reality itself is apprehended—as partial, imperfect, incomplete ways in which the reality is known;"—in no sense are they "independent of, and separate from, the reality of which they are appearances."<sup>1</sup> Further, they "are not objects, but ways in which objects

<sup>1</sup> *Appearance and Real Existence* (Proc.: *Aristotelian Soc.*: 1913-14, pp. 33-36). In connection with this article should be read its predecessor (*Sense-Presentation and Thought*, 1906).